

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Barrett E. Cole et al. Examiner: Matthew P. Hodges
Serial No.: 10/735,531 Group Art Unit: 2879
Filing Date: December 12, 2003 Confirmation No.: 2695
For: PLANAR ULTRA VIOLET LIGHT DETECTOR
Docket No.: H0006044-1100.1232101

PRE-APPEAL BRIEF REQUEST FOR REVIEW

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Lynn Thompson April 19, 2007
Lynn Thompson Date

Applicants submit that the Examiner's rejections contain at least the following clear errors and/or omissions of one or more essential elements needed for a prima facie rejection.

The Examiner's rejection of claims 1-4 as being unpatentable over Eden et al. in view of Cheng et al. lacks the motivation necessary under 35 U.S.C. § 103(a). In describing the basic requirements of a *prima facie* case of obviousness, MPEP 2143 states, "First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings." Applicants submit that the only suggestion or motivation to combine the teachings of Eden et al. and Cheng et al. is found in the instant specification, which appears to be an error.

The Examiner acknowledges that Eden et al. fail to teach eutectic bonding between wafers, and asserts that it would have been obvious to one of ordinary skill in the art to use the eutectic binding of Chen et al. in the device of Eden et al. because eutectic bonding provides faster stronger bonds and a lower manufacturing temperature and thus would improve manufacturing of the device. Applicants respectfully disagree. Eden et al. teach using conventional plastic laminate, glass, quartz or mica to seal the device 500. See paragraph [0070]. In particular, Eden et al. teach sealing the microdischarge photodetector with glass frit at

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a temperature of 300 degrees C. See paragraph [0071]. Chen et al. teaches, "The silicon-gold eutectic state occurs at a temperature of 363° C that is the lowest bonding temperature for the silicon-gold system." See page 3, sentence bridging columns 1-2. Eden et al. appear to teach bonding at about the same temperature as Chen et al., thus the Chen et al. eutectic bonding would not appear to provide any advantage regarding lowering manufacturing temperature, as asserted by the Examiner.

Further, Eden et al. teach, "The present invention provides microdischarge photodetectors and arrays of microdischarge photodetectors that are relatively inexpensive and easy to fabricate using conventional techniques, are readily able to be integrated with conventional electronic or optoelectronic devices, and amenable to mass production." See paragraph [0041]. Eden et al. thus appear to teach a suitable means for sealing their device at a lower temperature that already provides a device that is easy and inexpensive to manufacture. Applicants submit that the Examiner's generalized statement that it would have been obvious to incorporate the use of eutectic bonding as disclosed by Cheng to bond the wafer layers disclosed by Eden in order to "advantageously improve" manufacturing of the device is not supported by either Eden or Cheng. Additionally, the Examiner has not provided any reasoned statements regarding how or why one of ordinary skill in the art would expect that using the eutectic bonding of Cheng in the device of Eden would "advantageously improve" manufacturing of the device of Eden.

In the Advisory Action mailed April 3, 2007, the Examiner asserts that while Eden does disclose the use of a glass frit or adhesives it also recognizes the problem of outgassing present in the use of such materials and presents a more complicated sealing process to account for these problems. It appears the Examiner may have misinterpreted Eden. Eden actually teaches:

A conventional plastic laminate, glass, quartz or mica may be used to seal the device 500. One problem with the plastic laminate is that the plastic outgasses impurities into the gas in the cavity 508 and may limit the lifetimes of laminated microdischarge detector 500. However, this is not a fundamental limitation on the device lifetime, and lifetime may be increased when using sealing materials that outgas less. Similarly, depositing or otherwise affixing a thin transmissive film such as tantalum oxide or glass onto conventional laminating sheets will impede or eliminate the outgassing process and may thus extend the lifetime of the microdischarge detector. Another alternative may be a vacuum baking procedure

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to significantly reduce the outgassing of conventional laminate sheets. As above, a screen may be added to the basic structure before sealing.

Emphasis added; see paragraph 70. Eden then goes on to teach "sealing the microdischarge photodetector with a window in an inexpensive package is with glass frit. This can presently be performed at temperatures approaching 300° C." See paragraph 71. Eden thus appears to teach that the use of a plastic laminate to seal the structure may cause outgassing, but that this problem can be overcome by various techniques, including using glass to seal the device. Thus, Eden already provides solutions to the outgassing problems that may result from using a plastic laminate.

The Examiner also asserts in the Advisory Action that "the bond disclosed by Eden is significantly weaker than the device layers it is bonding." The Examiner has not, however, provided any support for this assertion. If the Examiner is taking Official Notice of this asserted fact, Applicants respectfully disagree and submit that this is not notoriously well known, and request the Examiner provide a reference or reasoned statements supporting this assertion. The Examiner also asserts that Cheng discloses the eutectic bonding as providing a stronger bond than is available using the materials disclosed by Eden, however, the Examiner has not indicated where in Cheng such a teaching can be found.

Applicants submit that the general statements by the Examiner that Cheng provides advantages over Eden, without any indication of where in Cheng such teachings are found, appear not to satisfy the basic requirement for establishing a *prima facie* case of obviousness. MPEP 2143.01 III states, "The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)... Although a prior art device 'may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so.' 916 F.2d at 682, 16 USPQ2d at 1432.)." MPEP 2143.01 also states, "The level of skill in the art cannot be relied upon to provide the suggestion to combine references. *Al-Site Corp. v. VSI Int'l Inc.*, 174 F.3d 1308, 50 USPQ2d 1161 (Fed. Cir. 1999)." It appears that the Examiner has based the determination of obviousness

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on the fact that one of ordinary skill in the art could combine the teachings of Eden and Cheng and achieve the claimed detector. Applicants submit that there the only motivation for one of ordinary skill in the art to substitute the eutectic bonding of Cheng et al. for the conventional bonding of Eden et al. appears to be in the instant specification, which appears improper.

For at least the reasons set forth above, the Examiner's rejection of claims 5 -12, 20-27, and 29-32 as being unpatentable over Eden et al. in view of Cheng et al. and Axmark et al. also appears to be based on impermissible hindsight. As discussed above, there is no motivation for combining Eden et al. and Cheng et al. Axmark et al. do not appear to provide what Eden et al. and Cheng et al. lack. The only motivation for combining the references appears to be found in Applicants' specification, which appears improper.

Reconsideration and reexamination are respectfully requested. It is submitted that, in light of the above remarks, all pending claims are now in condition for allowance. If a telephone interview would be of assistance, please contact the undersigned attorney at 612-359-9348.

Respectfully submitted,

Date: 04-19-07


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